

CLAIMS

What is claimed is:

1. An apparatus, comprising:
 - (a) a pedestal having a top and a bottom;
 - 5 (b) a plurality of gimbal springs suspending the pedestal over a lower surface;
 - (c) a linkage arm connected to each gimbal spring, the connection occurring at a linkage-arm/gimbal-spring attachment point; and
 - (d) a stop located below the bottom of the pedestal.
- 10 2. The apparatus, according to claim 1, further comprising:
 - (a) a post mounted to the top of the pedestal; and
 - (b) a mirror mounted on the post.
- 15 3. The apparatus, according to claim 1, further comprising an actuator coupled to at least one linkage arm, the actuator being suspended in an actuator plane that is substantially parallel to and above the lower surface.
4. The apparatus, according to claim 3, wherein the stop extends upwards from the lower surface.
- 20 5. The apparatus, according to claim 3, wherein the stop extends 10 μm upwards from the lower surface.

6. The apparatus, according to claim 1, wherein the stop extends to within 3 μm of the bottom of the pedestal.
- 5 7. The apparatus, according to claim 1, wherein the stop has a top with a cross-sectional area that is at least 4 times the cross-sectional area of bottom of the pedestal.
- 10 8. The apparatus, according to claim 1, wherein the stop has a top with a circular cross-section, the circular cross section having a diameter greater than 120 μm .
9. The apparatus, according to claim 1, further comprising a shock absorber that extends beyond the linkage-arm/gimbal-spring attachment point.
- 15 10. An apparatus, comprising:
- (a) a pedestal having a top and a bottom;
 - (b) a plurality of gimbal springs suspending the pedestal above a lower surface;
 - 20 (c) a linkage arm connected to each gimbal spring, the connection occurring at a linkage-arm/gimbal-spring attachment point; and

(d) a shock absorber that extends from at least one linkage arm beyond the linkage-arm/gimbal-spring attachment point.

11. The apparatus, according to claim 10, further comprising:

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(a) a post mounted to the top of the pedestal; and

(b) a mirror mounted on the post.

12. The apparatus, according to claim 10 wherein the shock absorber is a flexible extension of the at least one linkage arm.

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13. The apparatus, according to claim 12 wherein the shock absorber extends a sufficiently long distance to ensure that it contact the lower surface prior to the gimbal spring.

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14. The apparatus, according to claim 13, further comprising a stop located below the bottom of the pedestal.

15. The apparatus, according to claim 10, wherein the shock absorber is disposed closer to the lower surface than the at least one linkage arm.

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16. The apparatus, according to claim 10, wherein a shock absorber extends each linkage arm beyond the linkage-arm/gimbal-spring attachment point.

17. A method for increasing heat transfer from a mirror coupled to a pedestal suspended by gimbal springs over a lower surface, the method comprising: providing a solid heat-conduction path to the lower surface, the solid heat-conduction path being located within 3 μm of the pedestal.
18. The method, according to claim 17, wherein the solid heat-conduction path has a cross-sectional area that is at least 4 times greater than the cross-sectional area of the pedestal.
19. The method, according to claim 17, wherein the heat transfer from the mirror is increased by at least 10%.
20. The method, according to claim 17, wherein the solid heat-conduction path includes a high-conductivity material.